9.2 → Interest 9.3 → Saving Money 9.4 → Borrowing Money

MATH 125 Finance Formula Sheet

Simple Interest

9.2

$$I = Prt \quad (1)$$

$$A = P(1+rt) \quad (2)$$

$= P + I$ (↳ Prt)

Compound Interest

$$A = P\left(1+\frac{r}{n}\right)^{nt} \quad (3)$$

A ↓ FV, P ↓ principal, initial investment

9.3

$$P = \frac{A}{\left(1+\frac{r}{n}\right)^{nt}} \quad (4)$$

9.2

$$APY = \left[\left(1+\frac{r}{n}\right)^{n} - 1\right] \cdot 100 \quad (5)$$

↳ annual percentage yield

$$A = Pe^{rt} \quad (6)$$

↳ continuously compounded interest

Annuities → recurring payments

Future Value:

9.3

$$FV = PMT \cdot \frac{\left[\left(1+\frac{r}{n}\right)^{nt} - 1\right]}{\left(\frac{r}{n}\right)} \quad (7)$$

$$PMT = FV \cdot \frac{\left(\frac{r}{n}\right)}{\left[\left(1+\frac{r}{n}\right)^{nt} - 1\right]} \quad (8)$$

Present Value: (loan amount)

9.4

$$PMT = P \cdot \frac{\left(\frac{r}{n}\right)}{\left[1-\left(1+\frac{r}{n}\right)^{-nt}\right]} \quad (9)$$

$$P = PMT \cdot \frac{\left[1-\left(1+\frac{r}{n}\right)^{-nt}\right]}{\left(\frac{r}{n}\right)} \quad (10)$$

↓ maximum purchase price

Credit Cards

9.4

$$R = \frac{-\log\left[1-\frac{r}{n}\left(\frac{A}{PMT}\right)\right]}{\log\left(1+\frac{r}{n}\right)} \quad (11)$$

FV, loan amount

↓ # of payments to pay back loan

9.1

$$\% \text{ change} = \frac{\text{new} - \text{ref}}{\text{ref}} \times 100\%$$